REMARKS

Claims 1-38 are in this application and are presented for consideration. By this Amendment, Applicant has amended claims 1-38. Applicant has also amended the abstract and the specification as shown above. Applicant has attached a replacement sheet of drawings of Figure 5A.

The drawings have been objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign 31A mentioned in the description. Applicant has attached a replacement sheet of drawings of Figure 5A in which reference 31A is now shown. It is Applicant's position that the drawings as now presented comply with the requirements.

The Office Action states that the Applicant is reminded of the proper language and format for an abstract of the disclosure. Applicant has amended the abstract as shown above. Specifically, the terms "said" and "means" have been deleted in the abstract.

The disclosure has been objected to because of minor informalities. Applicant has amended the specification paying close attention to the Examiner's remarks. Applicant would like to thank the Examiner for the careful review of the specification.

Claim 12 has been objected to because the claim does not provide proper dependency. Applicant has amended claim 12 so that claim 12 is now based on claim 1.

Claims 1-38 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Gehrmann et al. (US 5,008,992) in view of Canton (US 4,839,757).

The present invention relates to a method and a device that advantageously automatically replaces spools of elastic yarn and produces a composite yarn. The present

invention provides a simple and cost-effective way of replacing the spools of elastic yarn. The composite yarn comprises at least one elastic yarn covered with at least one covering yarn. A first spool of a first elastic yarn and a second spool of a second elastic yarn are provided. The first elastic yarn is fed to an interlacing jet. The interlacing jet covers the first elastic yarn with at least one covering yarn to form the composite yarn. The composite yarn is wound on a developing cop. The composite yarn fed to the developing cop is interrupted by an interrupting device and the developing cop is replaced with a new tube when the spool of elastic yarn is replaced with the second spool of elastic yarn. A retaining member holds an initial free end of the second elastic yarn when the elastic yarn from the first spool is fed to the interlacing jet. Means are provided to introduce the elastic yarn of the second spool into the interlacing jet. This advantageously allows the second elastic yarn to be easily inserted into the interlacing jet to resume forming the composite yarn once the elastic yarn of the first spool is finished. The covering yarn is continuously moving throughout the process. This is significant because the covering yarn is heated by an oven during the process and stopping the whole operation just to replace the elastic yarn would adversely affect the quality of the covering yarn since the covering yarn would be overexposed to the heat of the oven. The second elastic yarn is joined to the continuously moving covering yarn after the second elastic yarn has been inserted into the interlacing jet. The interrupting device then starts the winding of the composite yarn on the new tube so that a new tube of composite yarn can be formed. The prior art as a whole fails to disclose a device or method that advantageously allows for automatically replacing spools of elastic yarn without having to stop the feed of the covering yarn.

Gehrmann et al. discloses a method of producing a composite yarn. An elastic yarn component 14 is unwound overhead from a supply package 14a and an inelastic yarn component 1 is withdrawn from a package 1a. A yarn guide 27 is arranged coaxially to the supply package 14a and a yarn guide 4 is arranged coaxially to the supply package 1a. The elastic yarn component is withdrawn by a feed system 28 and then advanced to a delivery system 12. The thermoplastic yarn component one is unwound from the supply package 1a and guided through the yarn guide 4 by means of a feed system 5. The yarn component 1 then loops 360° about a draw pin 29 and is withdrawn from the draw zone by a draw roll system 30 and is advanced to the delivery system 12. Following the delivery system 12, the yarn components are brought together and guided through an air jet entangling nozzle 19 and withdrawn therefrom by a delivery roll system 31. The components are brought together only after they entered the nozzle 19. The resulting composite yarn is wound on a package 24 which is rotatably driven on its circumference by a drive role 25. Prior to being wound onto the package 24 the composite yarn passes over an oiling roll 20 which is positioned in an oil tank 21 and then through the yarn delivery roll system 31.

Gehrmann et al. fails to teach and fails to suggest a device or method that automatically replaces spools of elastic yarn. At most Gehrmann et al. teaches a method for producing a composite yarn. Gehrmann et al. fails to solve the problem of providing a method or a device that allows the covering yarn to continuously move without stopping while a spool of elastic yarn is automatically replaced. In the present invention a retaining member holds the initial end of the second elastic yarn while the first elastic yarn is fed from the first spool to the

interlacing jet. When the first spool runs out of first elastic yarn, means are provided to advantageously aid in inserting the second elastic yarn into the interlacing jet so that the second elastic yarn can be combined with the covering yarn. This advantageously provides a quick and simple way of inserting the second elastic yarn into the interlacing jet. In the present invention the covering yarn does not stop moving during the replacement of the first spool with the second spool. This is significant in the present invention because the covering yarn cannot be stopped since it passes through an oven and if the covering yarn is in the oven too long, which would occur if the whole process had to be stopped to replace the elastic yarn, the covering yarn becomes severely damaged. Gehrmann et al. fails to provide such an advantage since Gehrmann at el. does not disclose a retaining member that holds a second elastic yarn while the first elastic yarn is fed to an interlacing jet. Further Gehrmann et al. fails to automatically replace spools of elastic yarn while keeping the covering yarn continuously moving. As such Gehrmann et al. teaches a different approach and fails to suggest the advantages or features of the present invention.

Canton discloses a machine for producing a composite yarn from elastic and inelastic yarns. The machine comprises a support frame 1 for spools of respective inelastic yarns 13. The yarns 13 are passed via a yarn sensor 3 to a unit 10 for positioning the inelastic strands to be joined with the elastic strand. A joining apparatus 4 detects the presence of the inelastic strands and controls the uniform and continuous supply of inelastic strands to the joining unit. The joining unit 4 comprises support and rotation rollers 5 which cradle a bobbin 6 carrying the elastic strand 11, a take-up unit 7 for winding the composite yarn on a spool 8, pneumatic

joining assembly 9 with air jets and conditioning assembly 10. The elastic yarn 11 coming from the bobbin 6 is guided over the guide roller and through a feed means to the pneumatic joining assembly 9. The inelastic strands 13 wind about a motor driven roller 14 which has two portions 14a and 14b. The first portion 14a feeds the inelastic strands. The second portion 14b advances and maintains a stretch on the elastic strand by applying tension to the composite yarn. After passing around the motor driven roller 14 in the first portion 14a, the inelastic strands are passed around a fixed roller body 15 and then again around the portion 14a of the roller in a plurality of convolutions to accomplish the desired degree of drafting and tensioning. The inelastic strands 13 are passed through a humidifying assembly 16 to the pneumatic joining assembly 9. In the pneumatic joining assembly 9 the elastic yarn is stretched. The composite yarn which results is wound in a plurality of turns around the second portion 14b of the roller 14 and then delivered to the take-up assembly 7 to be wound on the spool 8.

Canton fails to teach and fails to provide any motivation for automatically replacing spools of elastic yarn as claimed in the present invention. At most Canton discloses an apparatus for forming a composite yarn from elastic and inelastic yarns but fails to disclose anything about replacing the spools of yarn. In contrast to Canton, the present invention takes a different approach. In the present invention a first spool of first elastic yarn and a second school of second elastic yarn are provided. The first elastic yarn is fed to an interlacing jet while a free end of the second elastic yarn is held by a retaining member. The interlacing jet of the present invention combines the elastic yarn and the covering yarn to form a composite yarn. When the first spool finishes feeding the first elastic yarn to the interlacing jet means are

provided to advantageously insert the second elastic yarn into the interlacing jet. While the first spool is being replaced by the second spool an interrupting device interrupts the feeding of composite yarn to the developing cop in the present invention. Once the second spool has replaced the first spool the interrupting device starts the winding of the composite yarn on the new winding tube. The present invention advantageously provides a device and method for inexpensively and quickly replacing the elastic yarn. The present invention also advantageously reduces the chances of the covering yarn from being damaged to overexposure of heat in the oven since the covering yarn does not have to be stopped while the elastic yarn is replaced. Canton fails to disclose how the spools 2 are replaced and fails to address the problem of continually feeding the covering yarn while the elastic spools are replaced. Further Canton fails to suggest providing an interrupting device or a retaining member as claimed in the present invention. As such the prior art as a whole takes a different approach and fails to suggest the advantages or features of the present invention. Accordingly, Applicant respectfully requests that the Examiner favorably consider claims 1 and 18 as now presented and all claims that respectively depend thereon.

Further action on the merits is respectfully requested.

Respectfully submitted
for Applicant,

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Attached: Replacement sheet of drawings of Figure 5A

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